

Amendments to the Claims

Please amend Claims 27, 32 and 33. Please add new Claims 34, 35 and 36. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Withdrawn) A method for monitoring condition of a material, said method comprising:
representing the condition of the material with multiple states, at least one of the states observable with an inspection;
using the multiple states with a model to estimate state progression; and
scheduling an inspection based on the progression of the multiple states.
2. (Withdrawn) A method as claimed in Claim 1 wherein the states comprise a damage state.
3. (Withdrawn) A method as claimed in Claim 1 wherein the states comprise a precursor state.
4. (Withdrawn) A method as claimed in Claim 1 wherein the model is used to pre-compute a database of damage progression conditions as a function of the states for rapid assessment of damage condition for decision support.
5. (Withdrawn) A method as claimed in Claim 1 wherein the states are selected to ensure observability of a particular damage progression behavior mode.
6. (Withdrawn) A method as claimed in Claim 1 wherein at least one of the multiple states is an initially preassumed crack size.
7. (Withdrawn) A method as claimed in Claim 1 wherein the inspection is performed by a nondestructive evaluation method.

8. (Withdrawn) A method as claimed in Claim 1 wherein the inspection comprises onboard diagnostics.
9. (Withdrawn) A method as claimed in Claim 1 wherein the inspection comprises eddy current sensors mounted on a surface of the material.
10. (Withdrawn) A method as claimed in Claim 1 wherein at least one of the states is fatigue.
11. (Withdrawn) A method as claimed in Claim 10 wherein fatigue damage progression is monitored continuously.
12. (Withdrawn) A method as claimed in Claim 10 wherein fatigue damage progression is monitored occasionally.
13. (Withdrawn) A method as claimed in Claim 12 further comprising:
increasing frequency of inspection for fatigue damage progression monitoring as the damage progresses.
14. (Withdrawn) A method as claimed in Claim 1 wherein the model is adapted as the states progress.
15. (Withdrawn) A method as claimed in Claim 1 wherein the material is part of an aircraft component.
16. (Withdrawn) A method as claimed in Claim 15 further comprising:
deciding disposition of a component based on the material condition states.
17. (Withdrawn) A method as claimed in Claim 16 wherein the disposition comprises aircraft maintenance.

18. (Withdrawn) A method as claimed in Claim 16 wherein the disposition comprises repair or rework.
19. (Withdrawn) A method as claimed in Claim 16 wherein the disposition comprises airworthiness.
20. (Withdrawn) A method as claimed in Claim 1 further comprising:
monitoring rates of change of states.
21. (Withdrawn) A method as claimed in Claim 21 wherein the rates of change of selected states are determined from inspections at at least two different times.
22. (Withdrawn) A method as claimed in Claim 1 further comprising:
selecting a health control action designed to achieve a quantitative goal according to a control algorithm.
23. (Withdrawn) A method as claimed in Claim 22 wherein the control action is rework.
24. (Withdrawn) A method as claimed in Claim 23 wherein the rework is shot peening.
25. (Withdrawn) A method as claimed in Claim 22 wherein the quantitative goal is a reduction of total ownership cost without reducing readiness.
26. (Withdrawn) A method as claimed in Claim 25 wherein the quantitative goal is constructed from an assessment of available quantitative current and historical information combined with expert qualitative information.
27. (Currently Amended) A method for health control of an article comprising:
examining material condition of an article with an eddy current sensor;

determining presence of an early stage damage, based on a variation of an absolute electrical property;

performing a health control action on the article if early stage damage is present; after the health control action is complete or if no early stage damage is detected, establishing a baseline condition for ~~future inspections with another examination of the article with the eddy sensor~~ an absolute electrical property; and

performing future inspections that use this baseline condition for comparison to make decisions based on article health.

28. (Original) A method as claimed in Claim 27 wherein the eddy current sensor is a sensor array.
29. (Original) A method as claimed in Claim 27 wherein the sensor is mounted to a surface of the article.
30. (Original) A method as claimed in Claim 27 wherein the sensor is scanned over a surface of the article.
31. (Original) A method as claimed in Claim 27 further comprising:
integrating the health control action with scheduling of inspections.
32. (Currently Amended) A method as claimed in Claim 27 wherein the health control action is ~~rework~~ blending out of early stage damage to extend life.
33. (Currently Amended) A method as claimed in Claim 32 wherein the ~~rework is shot peening~~ shot peening is performed after blending out.
34. (New) A method as claimed in Claim 27 wherein the electrical property is electrical conductivity.

35. (New) A method as claimed in Claim 27 wherein the electrical property is magnetic permeability.
36. (New) A method as claimed in Claim 27 wherein the health control action effectively returns the article to original material condition.